

CORNELL UNIVERSITY.

# ANNOUNCEMENT OF COURSES

IN THE

COLLEGE OF AGRICULTURE,

1892-93.

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[Special attention is called to the new Short Course  
described on p. 16.]

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ITHACA, N. Y.  
PUBLISHED BY THE UNIVERSITY,  
1892.

# OFFICERS OF INSTRUCTION AND ADMINISTRATION.

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JACOB GOULD SCHURMAN, A.B., D.Sc., LL.D.,  
President.

GEORGE CHAPMAN CALDWELL, B.S., Ph.D.,  
Professor of Agricultural and Analytical Chemistry.

JAMES LAW, F.R.C.V.S.,  
Professor of Veterinary Medicine and Surgery.

ALBERT NELSON PRENTISS, M.S.,  
Professor of Botany, Horticulture and Arboriculture.

ISAAC PHILLIPS ROBERTS, M.Agr.  
Director of the College of Agriculture and Professor of Agriculture.

JOHN HENRY COMSTOCK, B.S.,  
Professor of Entomology and General Invertebrate Zoology.

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LOUIS MONROE DENNIS, Ph.B., B.S.,  
Assistant Professor of Analytical Chemistry.

GEORGE FRANCIS ATKINSON, Ph.B.,  
Assistant Professor of Cryptogamic Botany.

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Instructor in Horticulture.

ALEXANDER D. MACGILLIVRAY,  
Assistant in Entomology.

JAMES EDWARD RICE, B.S.,  
Assistant in Agriculture.

## MATERIAL EQUIPMENT OF THE COLLEGE OF AGRICULTURE.

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The University grounds consist of two hundred and seventy acres of land, bounded on the north and south by Fall Creek ravine and Cascadilla gorge respectively. One hundred and twenty-five acres of the arable land, of the eastern portion, is devoted to the use of the Agricultural Department. This part of the domain is managed with a view not only to profit, but also to illustrate the best methods of general agriculture. A four years' rotation is practiced on the principal fields ; one year of clover, one of corn, one of oats or barley and one of wheat. A dairy of twenty cows, a flock of sheep, some fifteen horses and colts, and other live stock are kept upon the farm. Nearly all of these animals are grades, bred and reared with the single view of giving object lessons which can be practiced with profit by the students on their return to their homes. A four story barn provides for housing all the animals, machinery, tools, hay, grain and manures. The stationary thresher, feed cutter, chaffer and other machinery is driven by steam power. The barn also furnishes many facilities for carrying on investigations in feeding and rearing all classes of domestic animals. The dairy house (46 x 20 ft.) two stories high, is furnished with a cold storage room, steam power, centrifuges, churns, microscopes and other necessary appliances for giving instruction and for conducting investigations in dairy husbandry.

The farm is also furnished with a well equipped piggery and tool house. Not far from the main barn has been constructed a hennery, 32 ft. long, with suitable yards and appliances for incubating and rearing domestic fowls.

The agricultural class room is furnished with a collection of grains and grasses, implements of horse and hand culture and various appliances for carrying on instruction and conducting investigations. The whole plant is managed with a

view to the greatest economy consistent with the greatest efficiency in imparting instruction.

About thirty acres are devoted to garden and orchards. Upon this area have been planted numerous varieties of most of the cultivated fruits, berries and edible nuts. Ten steam-heated forcing houses, with work rooms, offices, etc., and a barn, give ample facilities for giving instruction and practice in horticulture both winter and summer. The forcing of vegetables during winter is an important part of the horticultural labor. Tomatoes, cucumbers, melons, lettuce, radishes, cauliflowers, beans, rhubarb, asparagus, and other vegetables are in season in the forcing houses during the college year.

The botanical department is equally well equipped with specimens of rare and interesting plants, and extended conservatories which are attached to the Sage College.

The entomological department has not only class rooms, offices and extended museums in White Hall, but also an Insectary, 60 ft. long, with a two story cottage attached, for offices and work rooms. These commodious quarters give ample opportunity for carrying on at all times of the year extended investigations in the numerous breeding cages, with which the building is furnished.

The chemical department is very large and extended and has accommodations for both instructive and experimental work.

The veterinary department has a large class room with museums and has the use, for clinical purposes, of all the appliances at the farm buildings.

In brief the six departments into which the College of Agriculture is divided are very fully equipped for giving liberal, scientific and practical instruction in all that pertains to agriculture. The College has twenty professors, assistants and instructors. Those students who take the full course also receive instruction from about twenty other teachers in other departments; during their freshman and sophomore years.

## COURSES OF INSTRUCTION.

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The instruction in the college of agriculture is comprised in the following general lines :

### *Advanced or Post-Graduate Work in Agricultural Science.*

This instruction is designed to fit men for teachers and experimenters, and it may lead to the degrees of Master of Science and Doctor of Science. The laboratories are well equipped for the prosecution of independent work of a high character.

### *The Regular Course*

in Agriculture covers a period of four years. It is designed to afford an education as broad and liberal as that given by other departments of the University, and leads to the degree of Bachelor of Science in Agriculture. During the last two years of his course, the student selects his studies in those departments in which he is most interested.

### *The Special Course*

extends through two years or less, as the student desires. The selection of studies lies largely with the student, in the branches covered by the technical instruction offered in the regular or long course. The course is designed to give the elements of agricultural science and practice to those who cannot afford to avail themselves of the broader education offered by the regular course. This special course is open to all students who are 18 years of age and who present evidence of ability to prosecute the work advantageously.

### *The Short Winter Course*

is now offered for the first time. There are many farmers' sons and daughters who cannot spend two or more years at college, but who would receive great benefit from lectures and practice during the winter months.

This short winter course will consist of lectures by the professors and instructors in the various departments, supplemented in all cases by work in the barns, forcing-houses, dairy-house or other laboratories. It will extend through one term of 11 weeks, beginning with the 3d of January, 1893. Students of good habits and common school education, who are 16 years of age, are admitted to this course.

The requirements for admission to the courses of study, and the facilities offered are given in detail below.

### *The Regular Course.*

#### CONDITIONS OF ADMISSION.

Candidates must be at least *sixteen* years of age, or, if women, *seventeen*. They must have certificates of good moral character, and students from other colleges or universities are required to furnish from those institutions certificates of honorable dismissal.

Entrance examinations in the following subjects will be required :

1. In *English*. The candidate will be required to write a short English composition,—correct in spelling, punctuation, grammar, division by paragraphs, and expression,—upon one of several subjects announced at the time of the examination. In 1892 the subjects will be drawn from one or more of the following works : Shakespeare's Julius Cæsar and As You Like It, Scott's Marmion, Longfellow's Courtship of Miles Standish, Addison's Sir Roger de Coverley papers, Macaulay's second Essay on the Earl of Chatham, Webster's first Bunker Hill Oration, Irving's Alhambra, Scott's Talisman, George Eliot's Scenes from Clerical Life, Hawthorne's House of the Seven Gables.

The candidate will also be required to correct specimens of bad English set for him at the time of the examination.

[The works prescribed for the examinations of 1893 and 1894 are the following :

For 1893 : Shakespeare's Julius Cæsar and Twelfth Night, Scott's Marmion, Longfellow's Courtship of Miles Standish, Addison's Sir Roger de Coverley papers, Macaulay's second Essay on the Earl of Chatham, Emerson's American Scholar, Irving's Sketch Book, Scott's Ivanhoe, Dickens's David Copperfield.

For 1894 : Shakespeare's Julius Cæsar and Merchant of Venice, Scott's Lady of the Lake, Arnold's Sohrab and Rustum, the Sir Roger de Coverley Papers in the Spectator, Macaulay's second Essay on the Earl of Chatham, Emerson's American Scholar, Irving's Sketch Book, Scott's Abbot, Dickens's David Copperfield.

It is the special aim of the examination to test the candidate's practical, rather than his theoretical, knowledge of English, though due account is taken of the latter.

No student markedly deficient in English will be admitted to any of the courses in the University.

2. In *Geography*, political and physical; as much as is contained in Harper's School Geography or in Warren's Common School Geography.

3. In *Physiology and Hygiene*; the equivalent of Martin's "The Human Body" (briefer course), and of Wilder's "Health Notes" and "Emergencies." The treatises of Hutchinson, Huxley, Jenkins, and Walker are accepted as equivalents of Martin.

4. In *Arithmetic*, including the metric system of weights and measures; as much as is contained in the larger text-books.

5. In *Plane Geometry*; as much as is contained in the first five books of Chauvenet's Treatise on Elementary Geometry, or in the first five books of Wentworth's Elements of Plane and Solid Geometry, or in the first six books of Newcomb's Elements of Geometry, or in the first six books of Hamblin Smith's Elements of Geometry.

6. In *Algebra*, through quadratic equations, and including radicals and the theory of exponents; as much as is contained in the corresponding parts of the larger treatises of Newcomb, Olney, Ray, Robinson, Todhunter, Wells, or Wentworth, or in those parts of Oliver, Wait, and Jones's Treatise on Algebra that are indicated below, with the corresponding examples at the ends of the several chapters: chapters I, II, III; chapter IV, except theorems 4, 5, 6; chapter V, except §§ 3, 5, and notes 3, 4, of problem 2; chapter VII, § 11; chapter VIII, §§ 1, 2, the first three pages of § 8, and § 9; chapter XI, except § 9, problem 9 of § 12, and §§ 13, 17, 18.

7. In *American History*; Montgomery's "Leading Facts in American History," or its equivalent.

And in two of the four subjects following:

1. In *French*: the amount of French necessary for entrance would be represented approximately by the whole of Whitney's Practical French Grammar, and by the first hundred pages of Super's French Reader, and the whole of Crane and Brun's Tableaux de la Révolution Française. For the examination no specific authors or works are designated; but candidates are expected to be able to read easy French at sight, and to translate readily simple English into French. Pronunciation, and translation and writing of French from dictation will be included.



All candidates are required to present a statement from their teachers of the amount of French previously read, the text-books used, and the proficiency attained.

2. In *German*: the amount of German necessary for entrance would be represented approximately by the amount of reading matter in Brandt's Reader, or by the larger portion of Whitney's Reader, and by the amount of grammar in Brandt's, Joynes—Meissner's or Whitney's Grammar. Preparation by the so-called "natural" method should be supplemented by a thorough drill in syntax.

A satisfactory preparation will require in general a considerable reading of simple German prose and verse, and the careful study of one or more modern dramas. An accurate knowledge is also required of the principles of grammar, embracing inflections, syntax, the composition of words, the force of prefixes and suffixes, and the laws of consonantal change in cognate words, as well as the ability to render easy narrative prose from English into German, to translate ordinary German at sight, and to pronounce readily and correctly. The practice of committing to memory a number of short poems and anecdotes should constantly be cultivated.

For examinations no specific authors or works are designated. The writing of German from dictation will be included. All applicants are required to present a statement from their teachers of the amount of German previously read, the text-books used, and the proficiency attained.

Applicants for admission to the technical courses are advised to direct their preparatory study so as to enlarge their vocabulary, and to obtain a good reading knowledge of the language.

3. In *Mathematics*: Solid Geometry, as much as is contained in Newcomb's Elements of Geometry, or in the treatises of Chauvenet (old edition), Wentworth, Davies, or Robinson; Advanced Algebra, as much as is contained in those parts of Oliver, Wait, and Jones's, or Hall and Knight's Treatise on Algebra which are read at the University (a list is sent on application to the Registrar), or in the larger Treatises of Olney, Ray, or Wells; and Plane Trigonometry, as much as is contained in the mustarded portions of Oliver, Wait, and Jones's Treatise on Trigonometry, or in the Treatises of Wells, Wheeler, Olney, or Davies.

4. In *Latin*: four books of Cæsar's Commentaries or an equivalent, with a good knowledge of the grammar.

Students may be admitted without examination on diplomas and certificates as follows:



## I. ON THE REGENTS' DIPLOMA.

Diplomas issued by the Regents of the University of the State of New York and pass cards presented as *supplementary* to the Regents' Diploma, are accepted in place of examinations in all the subjects required for entrance which are covered by such diplomas, including, upon the recommendation of the University departments concerned, the subjects of French and German. A statement from the teacher of the work done in these two subjects should be presented by the holder of the diploma. Diplomas and statements should be sent by mail to the Registrar before the opening of the term.

## II. ON CERTIFICATE.

The following rules and regulations have been adopted by the Faculty of Cornell University on the subject of admission by certificate :

1. Certificates of work done in public or private schools, in or out of the State, will not be accepted in lieu of examinations, unless the applicant has completed a full course in the school.

2. The application for the admission of a student by certificate must be made by the principal of a school and not by the candidate himself.

3. The application from the principal must be accompanied by full and specific information with regard to the completeness and thoroughness of the studies and courses in which instruction is given. In case a catalogue or circular is published, a copy thereof should also be furnished.

4. Certificates from schools whose students prove to be imperfectly fitted, will ultimately not be considered.

5. Subjects in which an examination has been passed for admission to the school may be included in the certificate.

6. The candidates having received the certificate of a principal, will, however, not be exempted from the entrance examination in any particular subject unless his certificate shows that he has satisfactorily accomplished the full amount of work required in that subject for entrance.

7. Students admitted by certificate are to be informed that such admission is provisional, and that continuance in their classes will depend entirely on their ability to carry on the work successfully. In case their work is not successful they will be required to withdraw from the University.

8. The committee having charge of the acceptance of certificates may meet at any time during the collegiate year ; but in case the June or September examinations are to be taken in any subjects, the certificate, to insure consideration in season, should be forwarded at least as early as the first of June, or the first of September.

All communications on this subject and all certificates must be addressed to the Dean of the Faculty, from whom also blank forms of certificates may be obtained.

*Course of Study. Leading to the Degree of Bachelor of Science in Agriculture.*

Of the four advanced subjects, French, German, Mathematics, and Latin included among the requirements for admission, two must be offered at entrance, and a third taken during the first year.

Each lecture or recitation is one hour in length. Students are required to take the equivalent of fifteen of these University hours per week. In the case of laboratory and field work, two and one half hours of actual time is considered the equivalent of a University hour.

<i>Freshman Year.</i>	1st Term. Hours.	2d Term. Hours.	3d Term. Hours.
French, German or Mathematics	3 . . . . .	3 . . . . .	3 . . . . .
Invertebrate Zool.			
English . . . . .	2 . . . . .	2 . . . . .	2 . . . . .
Physiology . . . . .	3 . . . . .	3 . . . . .	3 . . . . .
Chemistry . . . . .	3 . . . . .	3 . . . . .	3 . . . . .
Hygiene . . . . .	1 . . . . .	— . . . . .	— . . . . .
	—	—	—
	15	14	14
Military drill . . . . .	2	Physical training . . . . .	2
		Military drill . . . . .	2
<i>Sophomore Year.</i>	1st Term. Hours.	2d Term. Hours.	3d Term. Hours.
English . . . . .	2 . . . . .	2 . . . . .	2 . . . . .
Physics . . . . .	3 . . . . .	3 . . . . .	3 . . . . .
Agricultural Chem. . . . .	3 . . . . .	3 . . . . .	3 . . . . .
Political economy . . . . .	3 . . . . .	3 . . . . .	3 . . . . .
Anat. methods . . . . .	1 . . . . .	Micros. methods . . . . .	1 . . . . .
Anatomical lab. . . . .	2 . . . . .	Microscopical lab. . . . .	2 . . . . .
Botany . . . . .	2 . . . . .	Applied Math . . . . .	3 . . . . .
	—	—	—
	16	16	16
Military drill . . . . .	2	Physical training . . . . .	2
Elective . . . . .	0-2 each term		

<i>Junior Year.</i>		3d Term.
Freehand drawing . . . . .		3
<i>Senior Year</i>	2d Term	3d Term
Thesis . . . . .	2	2
Military science . . . . .	2	

The remaining work of the junior and senior years is elective, with the condition that at least twelve hours must be devoted continuously to studies specially relating to agriculture, a list of which is given below, the studies being arranged in the general order in which they should be taken. The numbers preceding the subjects in this list are those given to them in the complete list of courses of instruction given in the University. For further details regarding the four-year course in agriculture see the University Register, which will be sent on application.

### AGRICULTURAL CHEMISTRY.

4. Agricultural Chemistry. Recitations. Fall term. Lectures. Winter and Spring terms. M., W., F., 9. Professor CALDWELL.

[4a. Agricultural Chemistry, advanced course. Lectures. T., Th., 9. Professor CALDWELL.]

Course 4a is open to those who have had courses 1 and 4.

5. Qualitative Analysis. Laboratory work. Daily ex. S., 9-5. Professor CALDWELL, Mr. PRESWICK, and Mr. SMITH.

6. Quantative Analysis. Laboratory work and recitations. Daily ex. S., 9-5. Professor CALDWELL, Assistant Professor DENNIS, Mr. CHAMOT, and Mr. ———

Course 6 is open only to those who have had course 5.

### BOTANY AND ARBORICULTURE.

3. Systematic and Economic Botany. Lectures, laboratory and seminary work, three hours per week. In the Fall term, taxonomy, with special studies of compositæ and gramineæ. Winter term, representative natural orders and groups of economic plants; seminary work on some assigned natural order, or some economic group, or on medicinal plants. Spring term. Field, herbarium and laboratory work, and excursions. Lectures. T., Th., 9. Professor PRENTISS. Laboratory work by appointment. Mr. ROWLEE.

4. Arboriculture and Forestry. Trees and shrubs, their structure, characteristics, cultivation, and uses; planting for ornamental and landscape effect; forests and forest economy; elements of forestry. Spring term. Lectures. F., 9. Additional work by appointment. Professor PRENTISS.

5. Experimental Plant Physiology. For a limited number of advanced students only. Hours and subjects by appointment. Professor PRENTISS.

6. Exotics. A study of conservatory plants, their propagation and cultivation; management of plant-houses; practical green-house work; preparation of papers and reports on special subjects. Hours and subjects by appointment. Professor PRENTISS and Mr. SHORE.

7. Histology of Plants. Fall term. Three hours per week. Lectures and laboratory work by appointment. Mr. ROWLEE.

8. Cryptogams. Three hours per week. Lectures and laboratory work by appointment. Assistant Professor ATKINSON.

a. Higher Cryptogams and their allies. Winter term.

b. Fungi and the Lower Cryptogams. Spring term.

10. Special subjects; laboratory work, investigations and theses. For graduate and advanced students. Professor PRENTISS, Assistant Professor ATKINSON and Mr. ROWLEE.

## GEOLOGY.

*Owing to changes in the department, it is impossible to make an announcement of the courses to be given. Full information may be expected in a supplementary announcement to be issued in September.*

## ENTOMOLOGY AND GENERAL INVERTEBRATE ZOOLOGY.

1. Invertebrate Zoology. General Course. Fall term. Lectures. M., W., F., 10. During the greater part of the term there will be only two lectures a week, and one practical exercise by the class in sections, at hours to be arranged. Professor COMSTOCK.

2. Invertebrate Zoology. Special laboratory course. Fall and Spring terms. M., W., F., 8-1; T., Th., 2-6. Professor COMSTOCK.

3. Entomology. Lectures on the characteristics of the order, sub-orders, and the more important families, with special reference to those of economic importance. Spring term. M., W., F., 10. Professor COMSTOCK.

Course 3 is open only to students who have taken course 1. Those special students in agriculture who do not take course 1, but who wish to study entomology, are recommended to take at least three hours of laboratory work (course 4) in the Fall term, and to join the Entomological Seminary (course 5) in the Spring term.

4. Entomology. Laboratory work, insect anatomy, determination of species, and the study of the life-history of insects. Fall and Spring terms. M., W., F., 8-1; T., Th., 2-6. Professor COMSTOCK.

5. Entomological Seminary. The literature of entomology. Recent advances in the practical application of entomology. Preparation and discussion of papers by members of the Seminary. Spring term. T., 2.30-4.30. Professor COMSTOCK.

Course 5 is open only to students who have taken course 4.

#### SUMMER COURSE.

6. Summer Course in Entomology and General Invertebrate Zoology. Lectures M., W., F., 9; field work, T., Th., 8.30-11; laboratory work, daily ex. S., 8-5 Professor COMSTOCK.

The laboratory and field work is arranged with reference to the needs and attainments of each student. After completing an elementary course in either general zoology or entomology, the student may select some subject in systematic zoology, economic entomology, or insect anatomy for special investigation. It is planned to have the work of each student, as far as possible, an original investigation. The chief object of the course is to give training in methods of natural history work. The Summer Course begins the Wednesday following Commencement, and lasts ten weeks.

Only those students of this University who have taken courses 1 and 3 are admitted to course 6. Teachers and others desiring to take this course without previously attending the University, should state in their applications the amount of zoological work they have done. Registration for the course will close June 1st.

The tuition fee for the Summer Course is \$25. Undergraduate students that have been members of the University during the preceding year, and graduate students that have been admitted by the Faculty as candidates for an advanced degree are excused from the payment of this fee.

#### HORTICULTURE.

[1. Variation of Plants under Culture. A discussion of the principles which underlie the modification and amelioration of plants under the hand of man. The course includes a consideration of the number and characters of plants under cultivation, the modification of plants by soils, latitude, climate, and treatment, selection, hybridization, heredity, etc., with some account of the labors of Knight, Naudin, Darwin, Wallace, Weisman, and others. Fall term. Lectures. M., T., Th., 10. Professor BAILEY.]

Course 1 is open to all students in all courses who have taken courses 1 and 2 in Botany.

This course will not be given in the Fall of 1892.

2. Landscape Gardening. The subject is treated as a fine art, and illustrated by charts and lantern views. Lectures (in Lincoln Hall.) Fall term. T., Th., 10. Professor BAILEY.

3. Pomology. Winter term. Lectures and other class work. M., W., F., 10. Professor BAILEY and Mr. LODEMAN.

4. Olericulture or Vegetable Gardening. Spring term. Lectures and other class work. M., W., F., 10. Professor BAILEY and Mr. LODEMAN.

5. Propagation of Plants. A practical laboratory course in nursery work in the Winter term. One hour per week by appointment. Mr. LODEMAN.

6. Handicraft. Practical training for students who intend to follow horticulture as a business. An extension of either course 3 or 4 or both. By appointment. Mr. LODEMAN.

7. Investigation incident to previous courses. For graduates and advanced students. By appointment. Professor BAILEY.

#### VETERINARY SCIENCE.

1. The anatomy, physiology, and hygiene of farm animals; data for determining age; principles of breeding, of shoeing, etc. Zymotic, parasitic, dietetic, and constitutional diseases of domestic animals. Veterinary sanitary science and police; prevention of animal plagues by legislative and individual action. General diseases of the different systems of organs in the domestic animals. Lectures. Daily except S., 8. Clinical demonstrations as opportunity offers. Professor LAW.

#### AGRICULTURE.

1. Wheat culture; preparation of soil, seeding, insects, harvesting, marketing; farm buildings, location, plans, construction, liability of contractors; fields, shape and size; fences and gates, construction, repairs, durability of woods, farm and public roads, bridges, and culverts; farms, selection and purchase; location with regard to markets, roads, schools, society; farm yard manures, composition, manufacture, preservation, application; commercial fertilizers, composition and use. Lectures. Fall term. Daily except Saturday, 11. Five hours. Professor ROBERTS.

2. Farm accounts, business customs, rights, and privileges, employment and direction of laborers; swine husbandry, breeds, feeding, management; the horse, breeds and breeding, feeding, education, care and driving; sheep husbandry, breeds and varieties, management and care, early lamb raising.



Three lectures on real estate and three lectures on contracts and personal property by the Faculty of the Law School. Lectures. Winter term. Daily except Saturday, 11. Five hours. Professor ROBERTS.

3. Farm drainage, mapping, construction, material, cost and utility, plows and plowing; farm implements and machinery, use, care and repairs; corn, oat, barley, flax, hop and tobacco culture; grasses and forage plants; weeds and their eradication. Lectures. Spring term. Daily except Saturday, 11. Five hours. Professor ROBERTS.

4. Practice in fields and barns. Thursday afternoon of each week of each term, 2-5. One hour. Inspection tours to points of technical interest throughout the state. Must accompany courses 1, 2 and 3. Professor ROBERTS.

5. Animal industry, principles of breeding, history and development, crossbreeding, improvement and creation of dairy and beef breeds of cattle; principles of feeding, care, selection and management of dairy and beef cattle. Winter term. Lectures, T., Th., 12; practice T., 2-5. Three hours. Assistant Professor WING.

6. Dairy husbandry; milk and butter. Lectures one hour per week and practice one hour by appointment. Fall term, T., 12. Two hours. Assistant Professor WING.

7. Dairy husbandry; cheese. Lectures one hour per week and practice one hour by appointment. Spring term, T., 12. Two hours. Assistant Professor WING.

8. Dairy husbandry. Laboratory work on special problems. By appointment. One to three hours. Open only to students who have had course 6. Winter term. Assistant Professor WING.

9. Experiment Station Methods. Seminary. Critical study of the work of the Agricultural Experiment Stations as found in the published reports and bulletins. Winter term, S., 10. Assistant Professor WING.

10. Poultry, breeding, feeding and management; construction of henneries. Lectures. Spring term, Th., 12. Mr. RICE.

#### CIVIL ENGINEERING.

5. Land Surveying. Lectures, recitations, and field work, nine hours per week. M., W., F., 9-12. Mr. OGDEN.

### *The Special Course.*

The Special Course is intended for young men who cannot well spend four years in preparing themselves to become farmers and who yet wish to avail themselves of technical, practical instruction in modern scientific agriculture. Young men who are eighteen years of age and who have a fair knowledge of the common English branches are admitted to the special course without examination. They may stay for two years and are required to take lectures and recitations to the amount of twelve hours per week, from the list of elective studies of the regular course given above. The remainder of their time, three to six hours per week, they may devote to any studies given in the University which they are prepared to pursue. Special students, during the time they are in the University, enjoy equal advantages in all respects with students who are studying for a degree. They are admitted by a vote of the Faculty upon recommendation of the Director of the College of Agriculture, and applications for admission to the special course should be made personally or by letter to the Director of the College.

### *The Short Course.*

This course will be given for the first time during the Winter term of 1892-3. It is intended to meet the needs of those who have only the time and means to spend one or at most two terms at the University. Persons who are of good moral character and sixteen years of age, upon application to the Director of the College of Agriculture, may be admitted to this course. The instruction offered will be designed especially to meet their needs. The course of study is partly prescribed and partly optional and is as follows :

Prescribed.—Agriculture, 5 hours per week.

Chemistry, 3 hours per week.

Two hours per day of educational work in barns, dairy house, forcing houses and laboratories.

Elective.—A minimum of 7 hours must be taken in addition to the prescribed work from the subjects named below :

Entomology, 3 hours per week.

Botany, 2 hours per week.

Horticulture, ( Course 1 ) 2 hours per week.

Horticulture ( Course 2 ) 2 hours per week.

Horticulture ( Course 3 ) 2 hours per week.

Dairy Husbandry, 2 hours per week.

Animal Industry, 2 hours per week.

Poultry Keeping, 1 hour per week.

Veterinary, 5 hours per week.

The following synopsis will show briefly the method of treatment and the ground to be covered by these various studies :

### *Agriculture.*

The instruction in Agriculture will include the preparation of the soil, fertilizers, harvesting and marketing for general and special crops; laying out and improving farms; drainage and irrigation; farm buildings and fences, location, plans and construction; farm yard manures and commercial fertilizers, composition, manufacture, preservation and application; farm accounts, business customs, rights and privileges; employment and direction of laborers; farm implements and machinery, use, care and repairs. Grasses and forage plants; weeds and their eradication; swine, sheep and horse husbandry; breeds and breeding, care and management.

The practice will include setting up and running machinery, as binders, mowers, etc. ; the sharpening and repairing of small tools as scythes, saws, spades, etc. ; draw-

ing up building plans and specifications ; farm book-keeping, etc., etc.

### *Horticulture.*

1. *Instruction in Fruit-Culture*, with practical work in the most approved methods of pruning and training, methods of planting, determination and discussion of varieties, etc. The University plantations contain all kinds of northern fruits in great variety.

2. *Vegetable Gardening*, with practical work in the forcing houses, where the student may work with winter crops of tomatoes, cucumbers, mushrooms, beans, lettuce, radishes and other plants.

3. *Propagation and Floriculture*. This course will comprise practice in all methods of plant propagation, from the sowing of seeds to making of cuttings and budding and grafting. The instruction will be given in the laboratory-houses—green-houses designed for purposes of instruction. Instruction will also be given in the management of ornamental plants, affording an excellent opportunity for young women.

Practice will also be given in the preparation and application of the most approved fungicides and insecticides.

### *Dairy Husbandry.*

The class room instruction will consist of lectures upon the production of milk and its manufacture into the various products. The dairy house practice will comprise the making of butter and cheese by the most approved methods ; testing of milk as to purity and fat content ; the use and care of centrifugal separators and other creaming devices, and the details of creamery and cheese factory management, etc., etc.

### *Animal Industry.*

Lectures will be given on the origin and formation of the various breeds of dairy and beef cattle ; their selection and

improvement ; the improvement of native cattle and the formation of new breeds; the composition of stock foods and their combination into rations suitable for various purposes. Practice will be given in tracing and tabulating pedigrees; judging by a scale of points ; computing rations, etc., etc.

### *Poultry Keeping.*

Will include instruction in breeds and breeding; feeding and management; caponizing; incubation, artificial and otherwise; construction of poultry houses, etc., etc.

### *Veterinary Science.*

The instruction will consist of lectures on the more common diseases of farm animals, their diagnosis and their remedies, with such clinical instruction in surgical operations as opportunity may offer.

### *Entomology.*

The instruction will consist of lectures and laboratory work on the structure, habits and life history of insects, together with a discussion of the best known methods of destroying insects affecting farm and garden crops.

### *Chemistry and Botany.*

The instruction in these subjects will be of such a nature as to afford the student a general idea of the principles underlying these sciences and their relations to plant and animal economy.

### *Expenses.*

There are no tuition fees in any of the courses in Agriculture, but an incidental fee of five dollars per term, to cover cost of materials used, will be required of all students, except those in the first two years of the regular course. Students working in the chemical, entomological and botanical laboratories will also be required to make deposits

sufficient to cover breakage and material used. The expense of living in Ithaca varies from three to seven dollars per week for board and lodging.

*Calendar.*

The entrance examinations for students in the Regular Course begin Sept. 21, 1892. The instruction begins in the Fall term, Sept., 29, 1892. The Short Course begins Jan. 3, 1893. Students may be excluded if not present at the beginning of the term.

For further particulars address I. P. Roberts, Director of the College of Agriculture of Cornell University, Ithaca, N. Y.

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**Kindly hand or send this to some friend  
who has children to educate.**

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